Device Properties

Bluetooth® Document

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**Abstract:**
This document contains the definitions for all device properties.
## Acknowledgments

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1 Introduction

A device property provides a usage context for a Generic Attribute Profile (GATT) characteristic. The characteristic defines the data format and the representation of the underlying data value(s). Some device properties define additional representation of the underlying data values represented by the associated GATT characteristics. Each device property is identified by an assigned 16-bit Property ID, which is associated with a GATT characteristic as defined either in the GATT Specification Supplement (GSS) [2] or in the Bluetooth Core Specification [9].

When a characteristic has more than one field, a description of context is generally provided for each field. Note that in order to parse a characteristic referenced by a device property, all characteristics referenced are required to either be of a fixed length or have a deterministic length based on the contents of the characteristic.

This is not a Bluetooth specification, therefore, the established Bluetooth SIG specification language conventions for use of the words shall, shall not, must, should, should not, may, and can do not apply to this document.
2 Properties

2.1 Ambient Temperature property group

This category contains the property definitions related to the air temperature surrounding a device.

2.1.1 Average Ambient Temperature in a Period of Day property

This property represents an average ambient temperature measured over a period of time during the day.

A period of time is represented with a start time of 0, which corresponds to midnight (local time), and the maximum value for the end time is 23.9. The values reported represent the measured average values for the periods in the past 24 hours.

Example use case: If the current time is 11:00, and an average is reported for a time period with a start value of 11.5 and with an end value of 11.6 (corresponding to a time period from 11:30 to 11:36), then that measurement represents the average temperature of that time period during the previous day.

Characteristic: Temperature 8 in a Period of Day

This property has three fields, each of which derives its value from the characteristic. These fields are shown in the table below.

<table>
<thead>
<tr>
<th>Property Field</th>
<th>Characteristic Field Mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>Start Time</td>
</tr>
<tr>
<td>Width</td>
<td>If End Time is greater than or equal to Start Time: End Time - Start Time</td>
</tr>
<tr>
<td></td>
<td>Otherwise: End Time - Start Time + 24</td>
</tr>
<tr>
<td>Value</td>
<td>Temperature</td>
</tr>
</tbody>
</table>

Table 2.1: Mapping from property fields to characteristic fields

2.1.2 Desired Ambient Temperature property

This property represents a desired ambient air temperature as set on a temperature control such as a user-controlled dial.

Characteristic: Temperature 8

2.1.3 Indoor Ambient Temperature Statistical Values property

This property represents the average, standard deviation, and minimum and maximum values for a set of measured ambient indoor temperatures, and the period of time over which the measurements were taken.

Characteristic: Temperature 8 Statistics
2.1.4 Outdoor Statistical Values property

This property represents the average, standard deviation, and minimum and maximum values for a set measured ambient outdoor temperatures, and the period of time over which the measurements were taken.

Characteristic: Temperature 8 Statistics

2.1.5 Precise Present Ambient Temperature property

This property represents ambient indoor or outdoor air temperature, using the more precise Temperature characteristic, as measured by a temperature sensor.

Characteristic: Temperature

2.1.6 Present Ambient Temperature property

This property represents an ambient indoor or outdoor air temperature as measured by a temperature sensor.

Characteristic: Temperature 8

2.1.7 Present Indoor Ambient Temperature property

This property represents an indoor ambient air temperature as measured by a temperature sensor. This property is typically used for indoor sensors, and is not intended for outdoor use.

Characteristic: Temperature 8

2.1.8 Present Outdoor Ambient Temperature property

This property represents an outdoor ambient air temperature as measured by a temperature sensor. This property is typically for outdoor sensors, and is not intended to be used for indoor sensors.

Characteristic: Temperature 8

2.2 Device Operating Temperature property group

This category contains the property definitions related to the operating temperature of a device.

Example use case: To monitor the temperature of an LED fixture or a refrigerator.

2.2.1 Device Operating Temperature Range Specification property

This property represents the minimum and maximum operating temperatures for the element. These parameters are used to detect under and over temperature events.

Characteristic: Temperature Range
2.2.2 Device Operating Temperature Statistical Values property

This property represents the average, standard deviation, minimum, and maximum operating temperatures and the data recording period as recorded by a temperature sensor. A value of 0 for the data recording period indicates that the period is the lifetime of the sensor.

Example use case: These lifetime values for the operating temperature of an LED fixture can be used to predict the remaining lifetime of the fixture, which is strongly dependent on the operating temperature.

Characteristic: Temperature Statistics

2.2.3 Device Over Temperature Event Statistics property

This property represents a count of the total number of operating over-temperature events, the average duration of the events, the time elapsed since the over-temperature event, and the total data recording period.

Example use case: To verify whether food items in a refrigerator have been exposed to high temperature.

Characteristic: Event Statistics

2.2.4 Device Under Temperature Event Statistics property

This property represents a count of the total number of operating under-temperature events, the average duration of the events, the time elapsed since the last under-temperature event, and the total data recording period.

Example use case: To verify whether manufacturer warranty conditions have been maintained.

Characteristic: Event Statistics

2.2.5 Present Device Operating Temperature property

This property represents the temperature of an element as measured by a temperature sensor.

Characteristic: Temperature

2.2.6 Relative Runtime in a Device Operating Temperature Range property

This property represents a relative runtime of a device within an operating temperature range. The Relative Value is the relative runtime, that is, the runtime within the interval compared with the total runtime recorded by the device. See the Total Device Runtime property in Section 2.14.8. The Minimum Temperature Value and Maximum Temperature Value define the operating temperature range.

Example use case: To check whether the element has been operating within the specified operating temperature boundaries for warranty purposes, or to predict remaining life of the device.

Characteristic: Relative Value in a Temperature Range

This property has three fields, each of which derives its value from the characteristic. These fields are shown in the table below.
### Table 2.2: Mapping from property fields to characteristic fields

<table>
<thead>
<tr>
<th>Property Field</th>
<th>Characteristic Field Mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>Minimum Temperature Value</td>
</tr>
<tr>
<td>Width</td>
<td>Maximum Temperature Value - Minimum Temperature Value</td>
</tr>
<tr>
<td>Value</td>
<td>Relative Value</td>
</tr>
</tbody>
</table>

2.3 Electrical Input property group

This category contains the property definitions related to the electrical input of a device such as input voltage and ripple voltage. These properties can be monitored to check whether the device is running at the right input conditions. They also can be used to monitor the performance of the electrical power distribution within a building, or to monitor the performance of the power supplies powering a device.

2.3.1 Average Input Current property

This property represents the average current for the element. It consists of the average current value and the averaging period.

Characteristic: Average Current

2.3.2 Average Input Voltage property

This property represents the average voltage for the element. It consists of the average voltage value and the averaging period.

Characteristic: Average Voltage

2.3.3 Input Current Range Specification property

This property represents the minimum, typical, and maximum input current range specification values. These values can be used together with the measured input current to check whether or not the device is operating within its specification.

Characteristic: Electric Current Specification

2.3.4 Input Current Statistics property

This property represents the average, standard deviation, minimum, and maximum values of the input current and the data recording period.

Characteristic: Electric Current Statistics

2.3.5 Input Over Current Event Statistics property

This property represents a count of the total number of over-current events, the average duration of the events, time elapsed since the over-current event, and the total data recording period.

Example use case: To verify whether manufacturer warranty conditions have been maintained.
2.3.6 **Input Over Ripple Voltage Event Statistics property**

This property represents a count of the total number of over-ripple-voltage events, the average duration of the events, the time elapsed since the over-voltage event, and the total data recording period.

Example use case: To verify whether manufacturer warranty conditions have been maintained.

Characteristic: Event Statistics

2.3.7 **Input Over Voltage Event Statistics property**

This property represents a count of the total number of over-voltage events, the average duration of the events, the time elapsed since the over-voltage event, and the total data recording period.

Example use case: To verify whether manufacturer warranty conditions have been maintained.

Characteristic: Event Statistics

2.3.8 **Input Under Current Event Statistics property**

This property represents a count of the total number of under-current events, the average duration of the events, the time elapsed since the over-current event, and the total data recording period.

Example use case: To verify whether manufacturer warranty conditions have been maintained.

Characteristic: Event Statistics

2.3.9 **Input Under Voltage Event Statistics property**

This property represents a count of the total number of under-voltage events, the average duration of the events, the time elapsed since the over-voltage event, and the total data recording period.

Example use case: To verify whether manufacturer warranty conditions have been maintained.

Characteristic: Event Statistics

2.3.10 **Input Voltage Range Specification property**

This property represents the minimum, typical, and maximum input voltage range as specified for a device.

Example use case: When these values are used together with the measured input voltages, verifying whether the device is operating within specification.

Characteristic: Voltage Specification

2.3.11 **Input Voltage Ripple Specification property**

This property represents the maximum allowed relative ripple voltage for the device. The relative ripple voltage is the ripple value divided by the average voltage (as reported by the Average Input Voltage property in Section 2.3.2).
2.3.12 Input Voltage Statistics property

This property represents the average, standard deviation, minimum and maximum values for the input voltage and the data recording period.

Characteristic: Voltage Statistics

2.3.13 Present Input Current property

This property represents the input current for the device.

Characteristic: Electric Current

2.3.14 Present Input Ripple Voltage property

This property represents the measured relative ripple voltage value. The relative ripple voltage is the ripple voltage value divided by the average voltage (as reported by the Average Input Voltage property in Section 2.3.2).

Example use case: For early detection of power supply failure, identifying whether capacitors in a power supply are starting to fail based on an increase in the ripple voltage.

Characteristic: Percentage 8

2.3.15 Present Input Voltage property

This property represents the input voltage for the device.

Characteristic: Voltage

2.3.16 Relative Runtime in an Input Current Range property

This property represents a relative runtime of a device within a current range.

Example use case: To update a column in a bar chart in order to check whether or not the device powered by the supply has been operating within the specified current boundaries for warranty purposes, or to predict the remaining life of the device.

Characteristic: Relative Runtime in a Current Range

This property has three fields, each of which derives its value from the characteristic. These fields are shown in the table below.

<table>
<thead>
<tr>
<th>Property Field</th>
<th>Characteristic Field Mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>Minimum Current</td>
</tr>
<tr>
<td>Width</td>
<td>Maximum Current - Minimum Current</td>
</tr>
<tr>
<td>Value</td>
<td>Relative Runtime Value</td>
</tr>
</tbody>
</table>

Table 2.3: Mapping from property fields to characteristic fields
2.3.17 Relative Runtime in an Input Voltage Range property

This property represents a relative runtime of a device within a voltage range.

Example use case: To update a column in a bar chart in order to check whether or not the device powered by the supply has been operating within the specified voltage boundaries for warranty purposes, or to predict the remaining life of the device.

Characteristic: Relative Value in a Voltage Range

This property has three fields, each of which derives its value from the characteristic. These fields are shown in the table below.

<table>
<thead>
<tr>
<th>Property Field</th>
<th>Characteristic Field Mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>Minimum Voltage</td>
</tr>
<tr>
<td>Width</td>
<td>Maximum Voltage - Minimum Voltage</td>
</tr>
<tr>
<td>Value</td>
<td>Relative Value</td>
</tr>
</tbody>
</table>

Table 2.4: Mapping from property fields to characteristic fields

2.4 Energy Management property group

This category contains the property definitions related to the energy management of a device.

Example use case: To monitor the energy use of devices such as a heater or a light fixture by enabling building information services to report aggregate energy usage, and report high-energy-use devices. Such information could be used to decide which devices to replace with more efficient devices, or to reduce energy usage by reducing the energy-use level or total operating time for high-energy-use devices.

2.4.1 Active Energy Loadside property

This property represents the active energy loadside used by the device to either change it into work and heat in alternating current or into work in direct current.

Characteristic: Energy 32

2.4.2 Active Power Loadside property

This property represents the active power loadside used by the device to either change it into work and heat in alternating current or into work in direct current.

Characteristic: Power

2.4.3 Apparent Energy property

This property represents the apparent energy used by the device to either change it into work and heat in alternating current or into work in direct current.

Characteristic: Apparent Energy 32
2.4.4 Apparent Power property

This property represents the apparent power that is the product of the RMS values of the voltage and the current, expressed as volt-amperes.

Characteristic: Apparent Power

2.4.5 Device Energy Use Since Turn On property

This property reports the energy used by the element since it was turned on. The runtime since turn on can be obtained from the Device Runtime Since Turn On property in Section 2.14.1.

Characteristic: Energy

2.4.6 Device Power Range Specification property

The Power Range Specification property represents the minimum, typical, and maximum power consumption of the device as specified by the manufacturer of the device.

Characteristic: Power Specification

2.4.7 Power Factor property

This property represents the ratio of the actual electrical power dissipated by an AC circuit to the product of the RMS values of current and voltage. The difference between the two values is caused by a reactance in the circuit and represents power that does no useful work.

Characteristic: Cosine of the Angle

2.4.8 Precise Total Device Energy Use property

This property represents the total energy used by a device over its lifetime.

Characteristic: Energy 32

2.4.9 Present Device Input Power property

This property reports the power usage of a device. It can be either measured by the device if the device has the capability to measure power directly, or it can be obtained from a mathematical model and a level setting value.

Characteristic: Power

2.4.10 Present Device Operating Efficiency property

This property represents the power efficiency of the operating device. The power efficiency is the useful output power divided by the total input power of the device. This efficiency is most affected by the output level or the input power conditions. The reported value either can be determined by measurement or can be calculated by the device based on manufacturer model data. This value can be used by building management systems to operate devices in a building with greater power efficiency.
2.4.11 Relative Device Energy Use in a Period of Day property

This property represents the energy use by a device over a period of time during the day. This property can be used to update a column in a bar chart.

A period of time is represented with a start time of 0, which corresponds to midnight (local time), and the maximum value for the start time is 23.9.

The values reported represent the average values for these periods during the past 24 hours.

Example use case: If the current time is 11:00AM, and an average is reported for a time period with a start value of 11.5 and an end value of 11.7 (corresponding to a time period from 11:30AM to 11:42AM), then that measurement represents the average energy use during that time period on the previous day.

Characteristic: Energy in a Period of Day

This property has three fields, each of which derives its value from the characteristic. These fields are shown in the table below.

<table>
<thead>
<tr>
<th>Property Field</th>
<th>Characteristic Field Mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>StartTime</td>
</tr>
<tr>
<td>Width</td>
<td>If End Time is greater than or equal to Start Time: End Time - Start Time</td>
</tr>
<tr>
<td></td>
<td>Otherwise: End Time - Start Time + 24</td>
</tr>
<tr>
<td>Value</td>
<td>Energy Value</td>
</tr>
</tbody>
</table>

Table 2.5: Mapping from property fields to characteristic fields

2.4.12 Total Device Energy Use property

This property represents the total energy used by the device since meter reset. If the meter cannot be reset, then the energy usage value is the value measured over the lifetime of the element.

Characteristic: Energy

2.5 Environmental property group

This category contains property definitions related to environment conditions.

Example use case: To monitor the air quality that surrounds a device.

2.5.1 Air Pressure property

This property represents a pressure measured by an air pressure sensor. This property is for sensors designed to report measured air pressure.

Characteristic: Pressure
2.5.2 Apparent Wind Direction property

This property represents the apparent wind direction as measured by the device.

Characteristic: Apparent Wind Direction

2.5.3 Apparent Wind Speed property

This property represents the apparent wind speed as measured by the device.

Characteristic: Apparent Wind Speed

2.5.4 Dew Point property

This property represents the Dew Point temperature as measured by the device.

Characteristic: Dew Point

2.5.5 Gust Factor property

This property represents the gust factor as measured by the device.

Characteristic: Gust Factor

2.5.6 Heat Index property

This property represents the heat index as measured by the device.

Characteristic: Heat Index

2.5.7 Magnetic Declination property

This property represents the magnetic declination as measured by the device.

Characteristic: Magnetic Declination

2.5.8 Magnetic Flux Density - 2D property

This property represents the magnetic flux density in two dimensions as measured by the device for two orthogonal axes: X and Y.

Characteristic: Magnetic Flux Density - 2D

2.5.9 Magnetic Flux Density - 3D property

This property represents the magnetic flux density in three dimensions as measured by the device for three orthogonal axes: X, Y, and Z.

Characteristic: Magnetic Flux Density - 3D
2.5.10 **Pollen Concentration property**

This property represents the pollen concentration as measured by the device.

Characteristic: Pollen Concentration

2.5.11 **Present Ambient Carbon Dioxide Concentration property**

This property represents the present ambient carbon dioxide concentration measured by a CO₂ sensor.

Characteristic: CO₂ Concentration

2.5.12 **Present Ambient Noise property**

This property represents the present ambient noise level measured by a sound level sensor.

Characteristic: Noise

2.5.13 **Present Ambient Relative Humidity property**

This property represents the relative humidity measured by a humidity sensor.

Characteristic: Humidity

2.5.14 **Present Ambient Volatile Organic Compounds Concentration property**

This property represents the present ambient volatile organic compounds concentration measured by a VOC sensor.

Characteristic: VOC Concentration

2.5.15 **Present Indoor Relative Humidity property**

This property represents an indoor relative humidity measured by a humidity sensor. This property is typically for sensors designed to measure indoor environmental humidity and is not intended to be used for measuring outdoor environmental humidity.

Characteristic: Humidity

2.5.16 **Present Outdoor Relative Humidity property**

This property represents an outdoor relative humidity measured by a humidity sensor. This property is typically for sensors designed to measure outdoor environmental humidity and is not intended to be used for measuring indoor environmental humidity.

Characteristic: Humidity
2.5.17 Pressure property

This property represents a pressure measured by a pressure sensor. This property is typically for sensors designed to report measured pressure other than the air pressure.

Characteristic: Pressure

2.5.18 Rainfall property

This property represents the rainfall as measured by a rain sensor.

Characteristic: Rainfall

2.5.19 True Wind Direction property

This property represents the true wind direction as measured by the device.

Characteristic: True Wind Direction

2.5.20 True Wind Speed property

This property represents the true wind speed as measured by the device.

Characteristic: True Wind Speed

2.5.21 UV Index property

This property represents the UV index as measured by the device.

Characteristic: UV Index

2.5.22 Wind Chill property

This property represents the wind chill factor as measured by the device.

Characteristic: Wind Chill

2.6 General Device Information property group

This category contains property definitions related to general device information such as device appearance, manufacturing data, and total runtime.

2.6.1 Device Appearance property

This property represents the external appearance of the device. A value is composed of a category (10 bits) and a sub-category (6 bits) [9].

Characteristic: Appearance
2.6.2 Device Country of Origin property

This property represents the country of origin of the device using ISO 3166-1 numeric M49 Country codes as maintained by the United Nations [3].

Characteristic: Country Code

2.6.3 Device Date of Manufacture property

This property represents the manufacturing date for the device.

Characteristic: Date UTC

2.6.4 Device Firmware Revision property

This property represents a revision identifier for the firmware within the device.

Characteristic: Fixed String 8

2.6.5 Device Global Trade Item Number property

This property represents a 14-digit Global Trade Item Number, which is typically used in product barcodes.

Characteristic: Global Trade Item Number

2.6.6 Device Hardware Revision property

This property represents the hardware revision for the hardware within the device.

Characteristic: Fixed String 16

2.6.7 Device Manufacturer Name property

This property represents the name of the manufacturer of the device. This value is set by the manufacturer or supplier of the device.

Characteristic: Fixed String 36

2.6.8 Device Model Number property

This property represents the model number that is assigned by the device vendor.

Characteristic: Fixed String 24

2.6.9 Device Serial Number property

This property represents the serial number for a particular instance of the device.

Characteristic: Fixed String 16
2.6.10  **Device Software Revision property**

This property represents the software revision for the software within the device.

Characteristic: Fixed String 8

2.7  **Light Control property group**

This category contains the property definitions related to light control and defines, for example, the light control properties set in the Lighting Control Model in the Mesh Model specification [1].

2.7.1  **Light Control Ambient LuxLevel On property**

This property represents the minimum ambient illuminance level as measured by a lux sensor that determines if a light or a group of lights transitions from the standby state to a run state. The standby state is a state when the light is switched on and controlled, but operating at minimum level. This minimum level can be zero but can also be set to a low value for security or safety reasons. The run state is a state in which the light is switched on and operating at normal light level.

This property can be used to avoid lights being on during the day with ample daylight in a space.

Characteristic: Illuminance

2.7.2  **Light Control Ambient LuxLevel Prolong property**

This property represents the ambient light level for a light or a group of lights in the prolong state. The prolong state is the intermediate state in between the run state and the standby state of a light.

Characteristic: Illuminance

2.7.3  **Light Control Ambient LuxLevel Standby property**

This property represents the ambient light level for a light or a group of lights to remain in a standby state. The standby state is a state when the light is switched on and controlled, but operating at minimum level. This minimum level can be zero but can also be set to a low value so that the lights are never fully turned off.

Characteristic: Illuminance

2.7.4  **Light Control Lightness On property**

This property represents the light lightness level of a light or a group of lights in a run state.

Characteristic: Perceived Lightness

2.7.5  **Light Control Lightness Prolong property**

This property represents the light lightness level of a light or a group of lights when in a prolong state.

Characteristic: Perceived Lightness
2.7.6 **Light Control Lightness Standby property**

This property represents the perceived light lightness level of a light or a group of lights when in a standby state.

Characteristic: Perceived Lightness

2.7.7 **Light Control Regulator Accuracy property**

This property represents the accuracy of a proportional-integral light regulator. This represents the regulation error that does not result in changing the regulator output.

Characteristic: Percentage

2.7.8 **Light Control Regulator Kid property**

This property represents the integral coefficient $K_i$ in a decreasing output operation mode of a proportional-integral light controller. This represents the integral coefficient when the light is decreasing its light output — indicated by the third character, d (“down”), in Kid, as opposed to the coefficient used when the light output is increasing, indicated by the third character, u (“up”), in Kiu.

Characteristic: Coefficient

2.7.9 **Light Control Regulator Kiu property**

This property represents the integral coefficient $K_i$ in an increasing output operation mode of a proportional-integral light controller. This represents the integral coefficient when the light is increasing its light output — indicated by the third character, u (“up”), in Kiu, as opposed to the coefficient used when the light output is decreasing, indicated by the third character, d (“down”), in Kid.

Characteristic: Coefficient

2.7.10 **Light Control Regulator Kpd property**

This property represents the proportional coefficient $K_p$ in a decreasing output operation mode of a proportional-integral light controller. This represents the proportional coefficient when the light is decreasing its light output — indicated by the third character, d (“down”), in Kpd, as opposed to the coefficient used when the light output is increasing, indicated by the third character, u (“up”), in Kpu.

Characteristic: Coefficient

2.7.11 **Light Control Regulator Kpu property**

This property represents the proportional coefficient $K_p$ in an increasing output operation mode of a proportional-integral light controller. This represents the proportional coefficient when the light is increasing its light output — indicated by the third character, u (“up”), in Kpu, as opposed to the coefficient used when the light output is decreasing, indicated by the third character, d (“down”), in Kpd.

Characteristic: Coefficient
2.7.12 Light Control Time Fade property

This property represents the time a light takes to transition from a run state to a prolong state. The run state is the state when the light is running at normal light level, the prolong state is an intermediate state of a light between the run state and the standby state.

Characteristic: Time Millisecond 24

2.7.13 Light Control Time Fade On property

This property represents the time lights take to transition from a standby state to a run state.

Characteristic: Time Millisecond 24

2.7.14 Light Control Time Fade Standby Auto property

This property represents the time lights transition from a prolong state to a standby state when the transition is automatic (such as when triggered by an occupancy or light sensor).

Characteristic: Time Millisecond 24

2.7.15 Light Control Time Fade Standby Manual property

This property represents the time lights take to transition to a standby state when the transition is triggered by a manual operation (e.g., by a user operating a light switch).

Characteristic: Time Millisecond 24

2.7.16 Light Control Time Occupancy Delay property

This property represents the time delay between receiving a signal from an occupancy sensor and a light controller executing a state change as a result of the signal.

Example use case: To synchronize state changes between multiple lights.

Characteristic: Time Millisecond 24

2.7.17 Light Control Time Prolong property

This property represents the duration of the prolong state, which is the state of a device between its run state and its standby state.

Characteristic: Time Millisecond 24

2.7.18 Light Control Time Run On property

This property represents the duration of the run state after last occupancy was detected.

Example use case: To prevent lights from entering a standby state when people are still in a room and occupancy detectors fail to detect occupancy (which could occur, for example, with passive infrared motion sensors and people in the room not moving for a period of time).
2.8 Lighting property group

This category contains the property definitions related to general lighting, light sources, and light fixtures. It does not define properties related to light control (see Light Control (Section 2.7), Light LC for these properties). It also does not define properties related to detection of light (see Photometry (Section 2.11) for these).

2.8.1 Center Beam Intensity at Full Power property

This property represents the maximum center beam intensity of a beam of light, for example, as produced by a spotlight fixture or a car headlight.

Characteristic: Luminous Intensity

2.8.2 Chromaticity Tolerance property

This property represents the tolerance as a circle in the CIE 1976 [4] (u',v') diagram of the chromaticity of the light produced by a device, such as a light source or a lighting fixture. This tolerance could be dependent on the current setting, temperature, or operating history of the device.

Example use case: To replace a light in quality-sensitive lighting applications.

Characteristic: Chromaticity Tolerance

2.8.3 Color Rendering Index R9 property

This property represents the Color Rendering Index R9 value of the light output of a lamp or light fixture calculated in accordance with CIE standard CIE 13.3-1995 "Method of Measuring and Specifying Color Rendering Properties of Light Sources" [5]. The R9 value is the ninth index of the set provided by the CIE 13.3-1995 standard. It represents the precision of the rendering of red color patches, and can be an indication of how well skin tones are rendered. This index value can be dependent on the operating conditions. The value reported by the property represents the Color Rendering Index at its present state.

Characteristic: CIE 13.3-1995 Color Rendering Index

2.8.4 Color Rendering Index Ra property

This property represents the Color Rendering Index Ra value of the light output of a lamp or light fixture calculated in accordance with CIE standard CIE 13.3-1995 "Method of Measuring and Specifying Color Rendering Properties of Light Sources" [5]. The Ra value is the average of the color rendering indexes (indexes 1 through 8). This index value can be dependent on the operating conditions. The value reported by the property represents the Color Rendering Index at its present state.

Characteristic: CIE 13.3-1995 Color Rendering Index

2.8.5 Light Distribution property

This property represents luminaire light distribution. It is the projected pattern of light a fixture disperses onto a surface. It is mostly applicable for outdoor lighting.
Characteristic: Light Distribution

2.8.6 Light Source Current property

This property represents the current needed to be provided for the light source to reach the nominal output.

Characteristic: Average Current

2.8.7 Light Source On Time Not Resettable property

This property represents the total time the light source has been on since manufacturing. This property is not resettable.

Characteristic: Time Second 32

2.8.8 Light Source On Time Resettable property

This property represents the total time the light source has been on since the last timer reset.

Characteristic: Time Second 32

2.8.9 Light Source Open Circuit Statistics property

This property represents a count of the total number of light source open circuit events in the light source, the average duration of the events, the time elapsed since the last open circuit event, and the total data recording period.

Example use case: To provide predictive maintenance services.

Characteristic: Event Statistics

2.8.10 Light Source Overall Failures Statistics property

This property represents a count of the total number of light source failure events in the light source, the average duration of the events, the time elapsed since the last overall failure event, and the total data recording period.

Example use case: To provide predictive maintenance services.

Characteristic: Event Statistics

2.8.11 Light Source Short Circuit Statistics property

This property represents a count of the total number of light source short circuit events in the light source, the average duration of the events, the time elapsed since the last short circuit event, and the total data recording period.

Example use case: To provide predictive maintenance services.

Characteristic: Event Statistics
2.8.12 Light Source Start Counter Resettable property

This property represents the number of times a light source has been turned on since the last reset. This property is resettable.

Characteristic: Count 24

2.8.13 Light Source Temperature property

This property represents the light source temperature.

Characteristic: High Temperature

2.8.14 Light Source Thermal Derating Statistics property

This property represents a count of the total number of thermal derating events in the light source, the average duration of the events, the time elapsed since the last thermal derating failure event, and the total data recording period.

Example use case: To provide predictive maintenance services.

Characteristic: Event Statistics

2.8.15 Light Source Thermal Shutdown Statistics property

This property represents a count of the total number of light source thermal shutdown events in light source, the average duration of the events, the time elapsed since the last thermal shutdown event of the light source, and the total data recording period.

Example use case: To provide predictive maintenance services.

Characteristic: Event Statistics

2.8.16 Light Source Total Power On Cycles property

This property represents the number of times the light source has been turned on since manufacturing. This property is not resettable. It is useful for predictive maintenance.

Characteristic: Count 24

2.8.17 Light Source Type property

This property specifies means by which a luminaire generates light and is an enumeration. The defined values include low pressure fluorescent, HID, low voltage halogen, incandescent, LED, and OLED. Special values are defined to indicate the light source type has not been specified, is other than any of the defined types, is not installed, or multiple light sources are installed.

Characteristic: Light Source Type
2.8.18 Light Source Voltage property

This property represents the voltage needed to be provided to use the light source with a constant current driver.

Characteristic: Average Voltage

2.8.19 Luminous Efficacy property

This property represents the present luminous efficacy of a light source or a lighting fixture. The luminous efficacy is the luminous flux produced by the device divided by its electrical input. Luminous efficacy typically is dependent on drive conditions, and the value reported represents the efficacy at present drive conditions.

Characteristic: Luminous Efficacy

2.8.20 Luminous Energy Since Turn On property

This property represents the luminous energy produced by a light source or a lighting fixture since it was turned on.

Characteristic: Luminous Energy

2.8.21 Nominal Light Output property

This property represents the nominal light output of the light source.

Characteristic: Light Output

2.8.22 Relative Runtime in a Correlated Color Temperature Range property

This property represents a relative runtime of a device in a correlated color temperature range. The Relative Runtime is the relative value, that is, the runtime in the interval compared to the total runtime recorded by the device. See the Total Device Runtime property in Section 2.14.8. The Minimum Correlated Color Temperature and Maximum Correlated Color Temperature define the correlated color temperature range as minimum and maximum values of a range.

Example use case: To see if the device powered by the supply has been operating within the specified correlated color temperature boundaries for warranty purposes, or to predict the remaining life of the device.

Characteristic: Relative Runtime in a Correlated Color Temperature Range

This property has three fields, each of which derives its value from the characteristic. These fields are shown in the table below.

<table>
<thead>
<tr>
<th>Property Field</th>
<th>Characteristic Field Mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>Minimum Correlated Color Temperature</td>
</tr>
<tr>
<td>Width</td>
<td>Maximum Correlated Color Temperature - Minimum Correlated Color Temperature</td>
</tr>
</tbody>
</table>
### 2.8.23 Total Luminous Energy property

This property represents the total recorded luminous energy produced by a light source or a lighting fixture.

Characteristic: Luminous Energy

### 2.9 Luminaire property group

This category contains the property definitions related to luminaires.

#### 2.9.1 Luminaire Color property

This property represents the luminaire color description. This property is mapped to the luminaire color field in memory bank 1, which is defined by the DiiA specification “DALI Part 251 – Memory Bank 1 Extension” [8].

Characteristic: Fixed String 24

#### 2.9.2 Luminaire Identification Number property

This property represents the luminaire identification number.

Characteristic: Fixed String 24

#### 2.9.3 Luminaire Identification String property

This property represents the luminaire identification string.

Characteristic: Fixed String 64

#### 2.9.4 Luminaire Manufacturer GTIN property

This property represents the luminaire manufacturer Global Trade Item Number (GTIN).

Characteristic: Global Trade Item Number

#### 2.9.5 Luminaire Nominal Input Power property

This property represents the luminaire nominal input power.

Characteristic: Power

---

<table>
<thead>
<tr>
<th>Property Field</th>
<th>Characteristic Field Mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Relative Runtime</td>
</tr>
</tbody>
</table>

*Table 2.6: Mapping from property fields to characteristic fields*
2.9.6 Luminaire Nominal Maximum AC Mains Voltage property

This property represents the luminaire nominal maximum AC mains voltage.

Characteristic: Voltage

2.9.7 Luminaire Nominal Minimum AC Mains Voltage property

This property represents the luminaire nominal minimum AC mains voltage.

Characteristic: Voltage

2.9.8 Luminaire Power at Minimum Dim Level property

This property represents the luminaire power at minimum dimming level.

Characteristic: Power

2.9.9 Luminaire Time of Manufacture property

This property represents the luminaire time of manufacture.

Characteristic: Date UTC

2.9.10 Rated Median Useful Life of Luminaire property

This property represents the luminaire rated median useful life. It is useful to find out how long the light source in the luminaire is designed to work.

Characteristic: Time Hour 24

2.9.11 Rated Median Useful Light Source Starts property

This property represents the light source median useful time. The parameter represents the rated median useful lifetime of the luminaire (including light source and other components).

Characteristic: Count 24

2.10 Occupancy property group

This category contains the property definitions related to occupancy of spaces. The occupancy properties are related to people, but also to cars (in parking garages), animals (on farms), and units within a building (e.g., rental units or hotel rooms).

2.10.1 Motion Sensed property

This property represents the activity level, as, for example, detected by a motion sensor. Typically, this is detected by a Passive Infrared (PIR) sensor. The motion activity is represented by a relative value ranging from 0 percent to 100 percent, with 100 percent the maximum activity that the sensor can record.

Characteristic: Percentage 8
2.10.2 Motion Threshold property

This property represents the activity level, for example, as detected by a motion or an occupancy sensor, below which motion or occupancy is not reported. For instance, a Passive Infrared (PIR) sensor does not report presence when the level of activity observed by the sensor is below this value.

Increasing the value of the Motion Threshold decreases the sensitivity of the sensor and decreasing the value of the Motion Threshold increases the sensitivity of the sensor. Setting the Motion Threshold to 0 percent results in the sensor operating at maximum sensitivity. Setting the Motion Threshold to 100 percent results in the sensor operating at minimum sensitivity.

Characteristic: Percentage 8

2.10.3 People Count property

This property represents the number of people present in a space or in a building. This property could be measured by counting the number of people entering and leaving a space, or by using a camera.

Characteristic: Count 16

2.10.4 Presence Detected property

This property represents whether or not an occupant is detected within range of the occupancy detector.

Characteristic: Boolean

2.10.5 Time Since Motion Sensed property

This property represents the time that has elapsed since the sensor last detected any activity.

Example use case: To achieve simultaneous reaction of a group of lights in response to a series of repeated messages sent by a motion sensor (see Section 6.5.1.7.1, Receiving a Sensor Status message in [1]).

Characteristic: Time Millisecond 24

2.10.6 Time Since Presence Detected property

This property represents the time that has elapsed since the sensor last detected presence.

Example use case: To turn off lights in the absence of any activity in a space.

Characteristic: Time Second 16

2.11 Photometry property group

This category contains the property definitions related to photometrics. These typically are measured with photodetectors.
2.11.1 Initial CIE 1931 Chromaticity Coordinates property

This property represents the initial chromaticity coordinates x and y of a device using CIE 1931 [6] Cx and Cy chromaticity coordinates at first use of the device. The value typically is measured by a spectrometer or a chroma meter, but can also be reported by a device that is aware of its chromaticity values, either by measurement or as a result of an association of its operating parameters with a color model. The property value typically is configured by the manufacturer of the device.

Characteristic: Chromaticity Coordinates

2.11.2 Initial Correlated Color Temperature property

This property represents the initial correlated color temperature associated with a device such as a color-tunable light. The value typically is measured by a spectrometer or a chroma meter, but can also be reported by a device that is aware of its chromaticity values, either by measurement or as a result of an association of its operating parameters with a color model. This property typically is configured by the manufacturer of the device.

Characteristic: Correlated Color Temperature

2.11.3 Initial Luminous Flux property

This property represents the maximum luminous output flux capability of a device at time of first use of the device. This value is typically configured by the manufacturer of the device.

Characteristic: Luminous Flux

2.11.4 Initial Planckian Distance property

This property represents the distance of a chromaticity coordinate from the Planckian locus on the (u’, 2/3v’) diagram as defined by ANSI standard C78.377-2008 [7] at first use of the device. The value typically is measured by a spectrometer or a chroma meter, but can also be reported by a device that is aware of its chromaticity values, either by measurement, or as a result of an association of its operating parameters with a color model. This property is typically configured by the manufacturer of the device.

Characteristic: Chromatic Distance from Planckian

2.11.5 Lumen Maintenance Factor property

This property represents the maximum luminous flux capability of a lamp or lighting fixture relative to the initial maximum luminous flux capability. This value could be measured using an integrated sensor of a device or could be calculated based on its operational runtime and other operating history parameters based on a mathematical model.

Characteristic: Percentage 8

2.11.6 Luminous Exposure property

This property represents the total recorded luminous exposure as measured by a lux meter. This property can be used to monitor luminous exposure of an illuminated work of art and adjust light levels or to take the art piece out of the exhibition when the exposure is too high.
2.11.7 Luminous Flux Range property

This property represents the luminous flux range of a device as specified by the manufacturer of a light source or a lighting fixture. Minimum Luminous Flux represents the start of the range and Maximum Luminous Flux represents the end of the range.

Characteristic: Luminous Flux Range

2.11.8 Present Ambient Light Level property

This property represents the light level as measured by a light sensor measuring illuminance (Lux).

Characteristic: Illuminance

2.11.9 Present CIE 1931 Chromaticity Coordinates property

This property represents the chromaticity coordinates x and y of a device using CIE 1931 chromaticity coordinates. The value typically is measured by a spectrometer or a chroma meter, but it can also be reported by a device that is aware of its chromaticity values, either by measurement or as a result of an association of its operating parameters with a color model.

Characteristic: Chromaticity Coordinates

2.11.10 Present Correlated Color Temperature property

This property represents the present correlated color temperature associated with a device such as a color tunable light. The value typically is measured by a spectrometer or a chroma meter, but it can also be reported by a device that is aware of its chromaticity values, either by measurement, or as a result of an association of its operating parameters with a color model.

Characteristic: Correlated Color Temperature

2.11.11 Present Illuminance property

This property represents the illuminance as measured by a lux meter.

Characteristic: Illuminance

2.11.12 Present Luminous Flux property

This property represents the luminous flux as output by a device.

Characteristic: Luminous Flux
2.11.13 Present Planckian Distance property

This property represents the present distance of a chromaticity coordinate from the Planckian locus on the ($u'$, $2/3v'$) diagram as defined by ANSI standard C78.377-2008 [7]. The value typically is measured by a spectrometer or a chroma meter, but also can be reported by a device that is aware of its chromaticity values, either by measurement, or as a result of an association of its operating parameters with a color model.

Characteristic: Chromatic Distance from Planckian

2.11.14 Relative Exposure Time in an Illuminance Range property

This property represents a relative exposure time of a light sensor (typically a photodetector) in an illuminance range.

The Relative Value field is the relative exposure time, that is, the exposure time within the illuminance interval compared with the total exposure time recorded by the sensor. See the Total Light Exposure Time property in Section 2.11.15.

The Minimum Illuminance and Maximum Illuminance define the illuminance range.

Example use case: To adjust light levels or reduce the hours of display for a particular piece of art in a museum.

Characteristic: Relative Value in an Illuminance Range

This property has three fields, each of which derives its value from the characteristic. These fields are shown in the table below.

<table>
<thead>
<tr>
<th>Property Field</th>
<th>Characteristic Field Mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>Minimum Illuminance</td>
</tr>
<tr>
<td>Width</td>
<td>Maximum Illuminance - Minimum Illuminance</td>
</tr>
<tr>
<td>Value</td>
<td>Relative Value</td>
</tr>
</tbody>
</table>

Table 2.7: Mapping from property fields to characteristic fields

2.11.15 Total Light Exposure Time property

This property represents the total recorded sensing duration of a light sensor (typically a photodetector).

Characteristic: Time Hour 24

2.12 Power Supply Output property group

This section contains the property definitions related to the electrical output of a power supply, also known as an LED driver, such as output voltage, output ripple voltage, and output current. These properties can be used to monitor the driver operating conditions and electrical operating history for light sources connected to the driver, such as LED arrays.
2.12.1 Average Output Current property

This property represents the average output current for the device. This property consists of two fields: the Electric Current Value field is the average of a series of output current values, and the Sensing Duration field is the period over which the series of output current values were measured.

Characteristic: Average Current

2.12.2 Average Output Voltage property

This property represents the average output voltage for the device. This property consists of two fields: the Voltage Value field is the average of a series of output voltage values, and the Sensing Duration field is the period over which the series of output voltage values were measured.

Characteristic: Average Voltage

2.12.3 External Supply Voltage property

This property represents the external supply voltage.

Characteristic: High Voltage

2.12.4 External Supply Voltage Frequency property

This property represents the external supply voltage frequency.

Characteristic: Voltage Frequency

2.12.5 Open Circuit Event Statistics property

This property represents the open circuit event statistics and is composed of four fields. The Number of Events field represents the count of open circuit events. The Average Event Duration field represents the average duration of all the open circuit events in the data-recording period. The Time Elapsed Since Last Event field represents the time elapsed since the last open circuit event occurred. The Sensing Duration field represents the total data-recording period.

Characteristic: Event Statistics

2.12.6 Output Current Percent property

This property represents the output current of a luminaire power supply related to the nominal output current. It includes the luminaire dim level and all internal reductions of the output current except the reduction by constant lumen functionality.

Example use case: To provide predictive maintenance services.

Characteristic: Percentage 8
2.12.7 Output Current Range property

This property represents an output current range of a device and consists of two fields: the Minimum Electric Current field represents the minimum output current for a device, and the Maximum Electric Current field represents the maximum output current for a device.

Characteristic: Electric Current Range

2.12.8 Output Current Statistics property

This property represents a set of statistical values for the output current of a device. It consists of five fields. The Average Electric Current Value field represents the average current of a series of measured current values over a period of time. The Standard Deviation Electric Current Value field represents the standard deviation of a series of measured current values over a period of time. The Minimum Electric Current Value field represents the minimum of a series of measured current values over a period of time. The Maximum Electric Current Value field represents the maximum of a series of measured current values over a period of time. The Sensing Duration field represents the total data-recording period.

Characteristic: Electric Current Statistics

2.12.9 Output Power Limitation property

Output power limitation is a condition when a power supply device limits the output current due to its internal power limitation. This property represents a count of the total number of output power limitation events, the average duration of the events, the time elapsed since the last event, and the total data recording period.

Example use case: To provide predictive maintenance services.

Characteristic: Event Statistics

2.12.10 Output Ripple Voltage Specification property

This property represents the maximum allowed relative ripple voltage for the device. The relative ripple voltage is the ripple value divided by the average output voltage. See the Average Output Voltage property in Section 2.12.2.

Characteristic: Percentage 8

2.12.11 Output Voltage Range property

This property represents the minimum and maximum output voltage of the power supply.

Characteristic: Voltage Specification

2.12.12 Output Voltage Statistics property

This property represents a set of statistical values for the output voltage of a device. It consists of five fields. The Average Voltage Value field represents the average voltage of a series of measured voltage values over a period of time. The Standard Deviation Voltage Value field represents the standard deviation of a series of measured voltage values over a period of time. The Minimum Electric voltage Value field represents the minimum of a series of measured voltage values over a period of time. The Maximum
Electric voltage Value represents the maximum of a series of measured voltage values over a period of time. The Sensing Duration field represents the total data-recording period.

Characteristic: Voltage Statistics

2.12.13 Over Output Ripple Voltage Event Statistics property

This property represents the over output ripple voltage event statistics and is composed of four values. The Number of Events field represents the count of over output ripple voltage events. The Average Event Duration field represents the average duration of all the over output ripple voltage events in the data recording period. The Time Elapsed Since Last Event field represents the time elapsed since the last over output ripple voltage event occurred. The Sensing Duration field represents the total data-recording period.

Characteristic: Event Statistics

2.12.14 Present Output Current property

This property represents the present output current for the device.

Characteristic: Electric Current

2.12.15 Present Output Voltage property

This property represents the present output voltage of the power supply.

Characteristic: Voltage

2.12.16 Present Relative Output Ripple Voltage property

This property represents the relative ripple voltage value. The relative ripple voltage is the ripple voltage value divided by the average voltage (as reported by the Average Output Voltage property in Section 2.12.2). These values could be used to monitor the performance of power supplies because an increase in the ripple voltage value could indicate that the capacitors in these power supplies are starting to fail.

Example use case: To indicate an early sign of a power supply failure.

Characteristic: Percentage 8

2.12.17 Reference Temperature property

This property represents the internal reference temperature of a luminaire. The value is specified by the luminaire manufacturer based on measurements at $t_q = 25^\circ C$, at rated luminaire power (at 100% dimming level).

Characteristic: High Temperature
2.12.18 Short Circuit Event Statistics property

This property represents the short circuit event statistics and is composed of four values. The Number of Events field represents the count of short circuit events. The Average Event Duration field represents the average duration of all the short circuit events in the data-recording period. The Time Elapsed Since Last Event field represents the time elapsed since the last short circuit event occurred. The Sensing Duration field represents the total data-recording period.

Characteristic: Event Statistics

2.12.19 Thermal Derating property

Thermal derating is a condition when the temperature of a device exceeds a threshold defined by the manufacturer. This property represents a count of the total number of thermal derating events, the average duration of the events, the time elapsed since the last event, and the total data recording period.

Example use case: To provide predictive maintenance services.

Characteristic: Event Statistics

2.13 Settings property group

This category contains the property definitions related to the various device settings.

2.13.1 Sensor Gain property

This property represents the ratio of the value reported by the sensor to the raw value measured by the sensor.

Example use case: To calibrate reported values using a multiplier acting as an attenuator or amplifier. A negative Sensor Gain value is used when the sensor reports values in reverse to the measured values.

Characteristic: Coefficient

2.14 Warranty and Service property group

This category contains the property definitions related to warranty and service of a device, for example, the total runtime of a device and the warranty runtime as provided by the manufacturer.

The device properties in this category can be used to check whether or not the device is still covered by a runtime warranty and to track aspects of device usage for a runtime warranty.

2.14.1 Device Runtime Since Turn On property

This property represents the total time the element has been operating in the On-state since it was turned on the last time. A value of 0 represents that the run time is not known.

Characteristic: Time Hour 24
2.14.2 Device Runtime Warranty property

This property represents the total operating time covered by the warranty.

Characteristic: Time Hour 24

2.14.3 Overall Failure Condition property

This property represents a count of the total number of device failure events, the average duration of the events, the time elapsed since the last event, and the total data recording period.

Example use case: To provide predictive maintenance services.

Characteristic: Event Statistics

2.14.4 Relative Device Runtime in a Generic Level Range property

This property represents a relative runtime of a device within a generic level range.

The Relative Value field is the relative runtime, that is, the runtime within the interval compared with the total runtime recorded by the device. See the Total Device Runtime property in Section 2.14.8.

The Minimum Generic Level and Maximum Generic Level define the generic level range.

Characteristic: Relative Runtime in a Generic Level Range

This property has three fields, each of which derives its value from the characteristic. These fields are shown in the table below.

<table>
<thead>
<tr>
<th>Property Field</th>
<th>Characteristic Field Mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>Minimum Generic Level</td>
</tr>
<tr>
<td>Width</td>
<td>Maximum Generic Level - Minimum Generic Level</td>
</tr>
<tr>
<td>Value</td>
<td>Relative Value</td>
</tr>
</tbody>
</table>

Table 2.8: Mapping from property fields to characteristic fields

2.14.5 Total Device Off On Cycles property

This property represents the total recorded count of transitions from an Off-state to an On-state for a device.

Characteristic: Count 24

2.14.6 Total Device Power On Cycles property

This property represents the total recorded power-on event count for a device.

Characteristic: Count 24
2.14.7 Total Device Power On Time property

This property represents the total of the recorded duration the device has been powered on. A value of 0 represents that this time is not known.

Characteristic: Time Hour 24

2.14.8 Total Device Runtime property

This property represents the total time that the element has been operating (has been in an On-state).

Characteristic: Time Hour 24

2.14.9 Total Device Starts property

This property is a counter that represents the number of device starts since the first start.

Example use case: To provide predictive maintenance services.

Characteristic: Count 24
# Property summary

## 3.1 Properties by name

<table>
<thead>
<tr>
<th>Property</th>
<th>Characteristic</th>
<th>Property ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Energy Loadside</td>
<td>Energy 32</td>
<td>0x0080</td>
</tr>
<tr>
<td>Active Power Loadside</td>
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<td>0x0081</td>
</tr>
<tr>
<td>Air Pressure</td>
<td>Pressure</td>
<td>0x0082</td>
</tr>
<tr>
<td>Apparent Energy</td>
<td>Apparent Energy 32</td>
<td>0x0083</td>
</tr>
<tr>
<td>Apparent Power</td>
<td>Apparent Power</td>
<td>0x0084</td>
</tr>
<tr>
<td>Apparent Wind Direction</td>
<td>Apparent Wind Direction</td>
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</tr>
<tr>
<td>Apparent Wind Speed</td>
<td>Apparent Wind Speed</td>
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</tr>
<tr>
<td>Average Ambient Temperature in a Period of Day</td>
<td>Temperature 8 in a Period of Day</td>
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<td>Average Input Current</td>
<td>Average Current</td>
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<td>Average Input Voltage</td>
<td>Average Voltage</td>
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<td>Average Output Current</td>
<td>Average Current</td>
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<td>Luminous Intensity</td>
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<td>Chromaticity Tolerance</td>
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<td>CIE 13.3-1995 Color Rendering Index</td>
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</tr>
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<td>Temperature 8</td>
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<td>Appearance</td>
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<td>Device Country of Origin</td>
<td>Country Code</td>
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</tr>
<tr>
<td>Device Date of Manufacture</td>
<td>Date UTC</td>
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</tr>
<tr>
<td>Device Energy Use Since Turn On</td>
<td>Energy</td>
<td>0x000D</td>
</tr>
<tr>
<td>Device Firmware Revision</td>
<td>Fixed String 8</td>
<td>0x000E</td>
</tr>
<tr>
<td>Device Global Trade Item Number</td>
<td>Global Trade Item Number</td>
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</tr>
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<td>Fixed String 36</td>
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<td>Device Model Number</td>
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<td>Device Operating Temperature Range Specification</td>
<td>Temperature Range</td>
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<td>Device Operating Temperature Statistical Values</td>
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</tr>
<tr>
<td>Device Over Temperature Event Statistics</td>
<td>Event Statistics</td>
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</tr>
<tr>
<td>Device Power Range Specification</td>
<td>Power Specification</td>
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</tr>
<tr>
<td>Device Runtime Since Turn On</td>
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</tr>
<tr>
<td>Property</td>
<td>Characteristic</td>
<td>Property ID</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>-------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Device Runtime Warranty</td>
<td>Time Hour 24</td>
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</tr>
<tr>
<td>Device Serial Number</td>
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<td>0x0019</td>
</tr>
<tr>
<td>Device Software Revision</td>
<td>Fixed String 8</td>
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</tr>
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<td>High Voltage</td>
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<td>Voltage Frequency</td>
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<td>Indoor Ambient Temperature Statistical Values</td>
<td>Temperature 8 Statistics</td>
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<td>Correlated Color Temperature</td>
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<td>Initial Luminous Flux</td>
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<td>Initial Planckian Distance</td>
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<td>Property ID</td>
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<td>Magnetic Flux Density - 3D</td>
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### Property by name

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*Table 3.1: Properties by name*

### Properties by characteristic

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Light Control Regulator Accuracy  
Lumen Maintenance Factor  
Motion Sensed  
Motion Threshold  
Output Current Percent  
Output Ripple Voltage Specification  
Present Device Operating Efficiency  
Present Input Ripple Voltage  
Present Relative Output Ripple Voltage |
| Pollen Concentration | Pollen Concentration |
| Power | Active Power Loadside  
Luminaire Nominal Input Power  
Luminaire Power at Minimum Dim Level  
Present Device Input Power |
| Power Specification | Device Power Range Specification |
| Pressure | Air Pressure  
Pressure |
| Rainfall | Rainfall |
| Relative Runtime in a Correlated Color Temperature Range | Relative Runtime in a Correlated Color Temperature Range |
| Relative Runtime in a Current Range | Relative Runtime in an Input Current Range |
| Relative Runtime in a Generic Level Range | Relative Device Runtime in a Generic Level Range |
| Relative Value in a Temperature Range | Relative Runtime in a Device Operating Temperature Range |
| Relative Value in a Voltage Range | Relative Runtime in an Input Voltage Range |
| Relative Value in an Illuminance Range | Relative Exposure Time in an Illuminance Range |
| Temperature | Precise Present Ambient Temperature  
Present Device Operating Temperature |
| Temperature 8 | Desired Ambient Temperature  
Present Ambient Temperature  
Present Indoor Ambient Temperature  
Present Outdoor Ambient Temperature |
| Temperature 8 in a Period of Day | Average Ambient Temperature in a Period of Day |
| Temperature 8 Statistics | Indoor Ambient Temperature Statistical Values  
Outdoor Statistical Values |
| Temperature Range | Device Operating Temperature Range Specification |
| Temperature Statistics | Device Operating Temperature Statistical Values |
| Time Hour 24 | Device Runtime Since Turn On  
Device Runtime Warranty  
Rated Median Useful Life of Luminaire  
Total Device Power On Time  
Total Device Runtime  
Total Light Exposure Time |
### Table 3.2: Properties by characteristic

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#### 3.3 Property identifiers

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*Table 3.3: Property identifiers*
4 References

[1] Bluetooth Mesh Model specification, Version 1.0 or later

[2] GATT Specification Supplement (GSS), Version 1.0 or later


[9] Bluetooth Core Specification, Version 5.4 or later